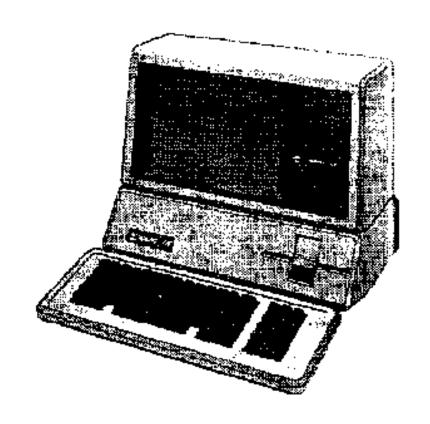


▲ Apple /// Computer Technical Information

Apple ///
Parallel Printer
Port Driver 1.31
Source Code Listing



Created by David T. Craig 07 January 1998 • 71533.606@compuserve.com



## FORMATTED LISTING

```
PROJECT : Apple /// SOS Parallel Printer Driver 1.31 (6502 Assembly Source Code) FILE NAME: PARPRINT.text
000001
                             .NOPATCHLIST
                                            "SOS Parallel Printer Driver -- 1.31 17-Mar-83"
000002
000003
000004
000005
                            SOS Parallel Printer Driver
000006
000007
000008
                             Copyright (C) 1983 by Apple Computer Inc.
                             All rights reserved.
000010
000011
000011
                   Revisions:
000013
000014
                   1.30
                            14-Jan-83
000015
                             New driver design, replaces version 1.01 22-Sep-81.
                            Default slot number now undefined (was 1).
Defined DCB INVERT bit for printers with inverted logic.
000016
000017
000018
000019
                            Fixed test for ASC_CR in Auto Line Feed processing.
000020
000021
000022
000023
000024
                                                                            ; Character device, output only, printer
000025
         SUBTYPE
                             .EQU
                                             03
                                             0001
000026
         APPLE
                             . EOU
000027
         RELEASE
                             . EQU
                                            1310
000028
                             .PAGE
000029
000030
            The macro SWITCH performs an N way branch based on a switch index. The maximum value of the switch index is 127 with bounds checking provided as an option. The macro uses the A and Y registers and alters the C,
000031
000032
000033
000034
             {\tt Z}, and {\tt N} flags of the status register, but the X register is unchanged.
000035
000036
                             SWITCH [index], [bounds], adrs table, [*]
000037
000038
                   index
                            This is the variable that is to be used as the switch index.
000039
                             If omitted, the value in the accumulator is used.
000040
000041
                  bounds
                            This is the maximum allowable value for index.
                            exceeds this value, the carry bit will be set and execution will continue following the macro. If bounds is omitted, no bounds checking will be performed.
000042
000043
000044
000045
            adrs_table This is a table of addresses (low byte first) used by the switch. The first entry corresponds to index zero.
000046
000047
000048
000049
                            If an asterisk is supplied as the fourth parameter, the macro will push the switch address but will not exit to
000050
                            it; execution will continue following the macro. The program may then load registers or set the status before exiting to the switch address.
000051
000052
000053
000054
000055
000057
                             MACRO
                                            SWITCH
                                             "%1" <> ""
000058
                             .IF
                                                                           ; If PARM1 is present,
000059
                                             %1
                                                                            ; Load A with switch index
                             .ENDC
000060
000061
                                             "%2" <> ""
                                                                            ; If PARM2 is present,
                             .IF
                                                                            ; Perform bounds checking ; on switch index
000062
                             CMP
                                             #%2+1
000063
                             BCS
                                             $3579
000064
                             . ENDC
000065
                             ASL
000066
                             TAY
000067
                                             %3+1,Y
                                                                            ;Get switch address from table
                             LDA
000068
                             PHA
                                                                               and push onto stack
000069
                             LDA
                                            %3,Y
000070
                             PHA
000071
                                             "%4" <> "*"
                                                                            ; If PARM4 is omitted,
000072
                             RTS
                                                                               Exit to code
                                                                            ;Otherwise, drop through
                             .ENDC
000073
                                             "%2" <> ""
000074
                             .IF
000075
        $3579
000076
                             .ENDC
000077
                             . ENDM
000078
                             .PROC
                                             PRINTER
000079
                             .WORD
                                             OFFFF
000080
                             . WORD
000081
                                             "Parallel Printer Driver -- "
                             .ASCII
                                             "Copyright (C) 1983 by Apple Computer Inc."
000083
000084
```



```
000085
               Device Handler Identification Block
000086
000087
000088
        IDBLK
                        .WORD
                                                                 ;Link to next device handler
                                     LP_MAIN
000089
                        . WORD
                                                                ;Entry point address
;Length of device name
                                      8
".PRINTER
000090
                        .BYTE
000091
                        .ASCII
                                     80
OFF
                                                                 ;Device # (Mark active)
;Slot # of Parallel card
000092
                        BYTE
000093
                        .BYTE
000094
                         .BYTE
                                      00
                                                                 ;Unit #
000095
                                      DEVTYPE
                         BYTE
000096
                        .BYTE
                                      SUBTYPE
000097
                         .BYTE
                                      00
                                      0000
000098
                         . WORD
000099
                                      APPLE
000100
                         .WORD
                                      RELEASE
000101
000102
000103
               Device Handler Configuration Block
000104
000105
000106
                        WORD
000107
                                      060
        RDYMASK
                        .BYTE
                                                                 ; Mask for valid ready bits
000108
        RDYSTAT
                        .BYTE
                                                                 ;Printer ready status value
000109
        ; Power | Select | Pap. Out | Rib. Out | Check |
000110
                                 00
000111
        PROPTNS .BYTE
000112
                                                                 ;Printer options
000113
000114
        ; Invert | Auto LF|
000115
        ;-----
000116
        CTRLVAL
                      .BYTE
                                     00
                                                                 ;Control word for UPIC
        ; 0 | 0 | STB pos | 0 | ACK pos | STB +8 | STB +4 | STB -2 |
000117
000118
000119
                 .BYTE
000120
        TIMEOUT
                                      64
                                                              ;Timeout count for ACK
000121
000122
000123
000123
             SOS Device Handler Interface
000125
000126
000127
000128
        SOSINT
                                      SOSINT+0
        REOCODE
                        . EQU
000129
                                                                 ;SOS request code
        BUFFER
                                      SOSINT+2
000130
                                                                 ;Buffer pointer
000131
                                                                 Requested count
        REQCNT
                        .EQU
        CTLSTAT
000132
                        .EOU
                                      SOSTNT+2
                                                                 ;Control/status code
                                                                 ;Control/status list pointer
000133
        CSLIST
                        .EQU
                                      SOSINT+3
000134
000135
000136
000137
000138
               SOS Global Subroutines
000139
000140
000141
000142
                                                                 ;SOS resource allocation
                                      1916
000143
        DEALCSIR
                                                                 ;SOS resource deallocation
        SYSERR
                                     1928
000144
                        .EOU
                                                                 ;SOS error return
000145
000146
000147
000148
000149
              SOS Error Codes
000150
000151
000152
000153
        XREQCODE
                        .EQU
                                      20
                                                                 ;Invalid request code
000154
        XCTLCODE
                        . EQU
                                      21
                                                                 ;Invalid control/status code
                        . EQU
                                                                 ;Device not open ;Device not available
000155
        XNOTOPEN
                                      23
000156
        XNOTAVIL
000157
        XNORESRC
                        . EQU
                                      25
                                                                 ;Resouce not available
000158
        XBADOP
                        .EQU
                                      26
                                                                 ;Invalid operation for device
000159
000160
000161
000162
000163
             Misecllaneous Equates
000164
000165
000166
        TRUE
                                      80
000167
                         . EOU
        FALSE
                        . EQU
                                    00
0A
0D
80
000169
000170
        ASC_LF
ASC_CR
                        .EQU
                        . EOU
000171
        BITON7
                        . EQU
        BITOFF7
000172
                         .EQU
000173
                         .PAGE
000174
000175
          Local Variables
000176
000177
```



```
000178
000179
000180
          OPENELG
                              BYTE
                                              FALSE
                                                                               ;Device open flag
         CRFLAG
000181
                              .BYTE
                                              FALSE
                                                                               ;Previous character was CR
                                              0
000182
          INVERT
                              . BYTE
                                                                               ;XOR with data for inverted logic ;Offset to I/O addresses
000183
          DEVOFF
                              BYTE
000184
                                              0
                                                                               ;Parallel card control word
          CTRLWRD
                              .BYTE
000185
000186
             Consumer State -- The Consumer State is the current operational status
             of the interrupt handler. The Idle state indicates that the consumer has no data to send, and there is no pending ACK from the printer. The Waiting for ACK state indicates that data has been STROBEd but the ACK
000187
000188
000189
000190
             is still pending. The Waiting for Ready state indicates that data was
             STROBEd when the printer was not Ready to accept it. The print ACK when it becomes Ready, then the consumer will STROBE again.
000191
                                                                                 The printer must
000192
000193
000194
         CSTATE
                              BYTE
                                                                               ¿Consumer State
000195
          IDLE
                              .EQU
                                              000
                                                                               ; Idle, waiting for data
000196
          WT_ACK
                              .EQU
                                              080
                                                                               ; Waiting for ACK
000197
          WT RDY
                              .EOU
                                              0C0
                                                                               ; Waiting for Ready
000198
000199
         ; Local Buffer -- Logically, the Local Buffer contains $FF bytes and the ; Buffer Count may range from $00 through $FF. Physically, however, the ; Local Buffer contains $100 bytes so the producer and consumer pointers ; can be incremented without testing them for end of buffer or wrap around.
000200
000201
000202
000203
000204
                              BYTE
                                              Ω
000205
         BUFCNT
                                                                               ;Local buffer byte count
                                                                               Producer buffer pointer; Consumer buffer pointer
000206
          PRODPTR
                              .BYTE
         CSMRPTR
000207
                              .BYTE
                                              0
000208
         LOCBUF
                              .EOU
                                                                               ;Local buffer
000209
                              .ASCII
                                              "Copyright (C) 1983 by Apple Computer Inc.
000210
                              .BLOCK
                                              *-LOCBUF^0FF+1
                                                                               ;Save $100 bytes for Local Buffer
000211
000212
                              .WORD
000213
          SIR TBL
                                              SIR_NUM
                                                                               ;System Resource Table
000214
         SIR_NUM
                              .BYTE
                                                                               ;SIR Number
000215
                              .BYTE
000216
                              . WORD
                                              LP_INTR
                                                                               ;Address of interrupt handler
000217
          INTR BANK
                              .BYTE
                                                                               ;Bank number
000218
         SIR_CNT
                              .EQU
                                               *-SIR_NUM
000219
                              . PAGE
000220
000221
000222
                   Hardware I/O Addresses
000223
000224
000225
000226
         B_REG
                              .EQU
                                                                               ;Bank Register
000227
                                                                               ;Environment Register
         ANYSLOT
000228
                              .EOU
                                              OFFDD
                                                                               ;Any Slot Interrupt Flag
000229
000230
000231
000232
000233
                   Universal Parallel Interface Card
000234
000235
              Note: to generate a STROBE (write to C082, or write to C080 with
                 AutoStrobe enabled), the CPU must be in Fixed Speed mode. All other registers may be accessed in either Fixed or Full Speed mode.
000236
000237
000238
000239
000240
000241
          PORTA
                                              0C080
                                                                               ;Output port A
                              . EQU
                                              0C081
0C083
000242
          PORTB
                                                                               ;Output port B
000243
          READB
                                                                               ; Input port
                              . EQU
000244
          STROBE
                                              0C082
                                                                               ;Send strobe
000245
          DATARDY
                              . FOU
                                              0C085
                                                                               ;Set DRDY, clear DRAK ;Clear DRDY, AutoStrobe
000246
                                              0C087
          CLEAR
                              . EOU
000247
          ; Set ACK, DRAK
000248
000249
         STATUS
                             .EQU
                                            0C084
                                                                               ;UPIC Status Register
000250
000251
                           6
000252
000253
              ACK
                        DRAK
                                                                                              ACK
000254
          ; Latched Latched
                                                                                             Level
000255
000256
000257
                                              0C086
         CTRLREG
                             .EQU
                                                                               ;UPIC Control Register
000259
000260
                           6
000262
               Int Enable
                                      Strobe/Ack Polarity
                                                                        Strobe Width = 3 uS
000263
                                                                        ----+----
000264
                                              DRDY ACK/DRAK
                                                                                +4
                        DRAK
                                                                      +8
000265
000266
                              . PAGE
000267
000268
000269
                   Parallel Printer Driver -- Mainline
000270
```



```
000271
000272
000273
         LP_MAIN
                           SWITCH
                                         REQCODE, 8, LP_TBL
000274
000275
         BADREO
                           LDA
                                          #XREOCODE
                                                                       ;Invalid request code
000276
                           JSR
                                          SYSERR
000277
         NOTOPEN
                                          #XNOTOPEN
                                                                        ;Device not open
000278
                           JSR
                                          SYSERR
000279
000280
         LP_TBL
                           .WORD
                                          LP_READ-1
000281
                           . WORD
                                          LP_WRITE-1
LP_STAT-1
000282
                           .WORD
000283
000284
                           .WORD
                                          LP_CNTL-1
BADREQ-1
000285
                            .WORD
                                          BADREQ-1
000286
000287
                           .WORD
                                          LP_OPEN-1
                                          LP_CLOSE-1
000288
                                          LP_INIT-1
000289
000290
000291
000292
000293
000294
                  Parallel Printer Driver -- Initialization
000295
000296
000297
        LP INIT
000298
                           .EOU
000299
                           LDY
                                         SLOT
                                                                        ;Check for valid slot #
000300
                           DEY
                                                                        ;If carry set out of range
                                          #04
000301
                           CPY
000302
                                                                        ;SOS will mark inactive
                           RTS
000303
                           .PAGE
000304
000305
000306
000307
                 Parallel Printer Driver -- Open
000308
000309
000310
        LP OPEN
                           .EQU
000311
                           BIT
                                          OPENFLG
                                                                        ;Printer open?
000312
                           BPL
                                          $010
                                                                        ;No
000313
                           LDA
                                          #XNOTAVIL
000314
                           JSR
                                          SYSERR
000315
000316
                           LDA
                                          SLOT
000317
                           ORA
                                          SIR_NUM
000318
                           STA
                                                                        ;Set up resource number
                           ASL
000319
                                          Α
000320
                           ASL
000321
                           ASL
000322
                           ASL
000323
                           STA
                                          DEVOFF
                                                                        ;Offset to slot addresses
                                          B REG
000324
                           T<sub>1</sub>DA
000325
                           AND
                                          #0F
000326
                           STA
                                          INTR_BANK
                                                                        ;Set up interrupt bank
000327
                           T<sub>1</sub>DA
                                          #SIR_CNT
000328
                           LDX
                                          SIR_TBL
                                          SIR_TBL+1
ALLOCSIR
000329
                           LDY
                                                                        ;Allocate resource
000330
                           JSR
000331
                           BCC
                                          $020
                                          #XNORESRC
SYSERR
000332
                           LDA
                                                                        ;Can't allocate resource
000333
                           JSR
000334
                                          #IDLE
CSTATE
000335
         $020
                           LDA
000336
                           STA
000337
                           JSR
                                          CNTL00
000338
                           T<sub>1</sub>DA
                                          #TRUE
OPENFLG
000339
                           STA
000340
                           RTS
000341
                           . PAGE
000342
000343
000344
                  Parallel Printer Driver -- Close
000345
000346
000347
000348
         LP_CLOSE
                           .EQU
000349
000350
                           ASL
BCS
                                          OPENFLG
                                                                        Printer open ?
                                          $010
                                                                        ;Yes, closed now
;No, error request
                                         NOTOPEN
000352
000353
         $010
                           JSR
                                          CNTT-00
                                                                        Reset UPIC
                                          SIR_TBL
SIR TBL+1
000355
                           LDX
000356
                           LDY
                                          DEALCSIR
                                                                        ;Deallocate resource
000358
000359
000360
000361
000362
000363
```



```
000364
                 Parallel Printer Driver -- Read
000365
000366
000367
000368
        LP READ
                          . EOU
000369
                          BIT
                                        OPENFLG
                                                                    ;Printer open ?
000370
                          BMI
                                        $010
                                                                    ;Yes
                                       NOTOPEN
000371
                          JMP
                                                                    ;No, return error
000372
000373
        $010
                          LDA
                                        #XBADOP
000374
                          JSR
                                        SYSERR
000375
                          .PAGE
000376
000377
000378
                 Parallel Printer Driver -- Write / Producer
000379
000380
000382
000383
        LP_WRITE
                          .EQU
                                        OPENFLG
                          BIT
                                                                    ;Printer open ?
000384
                          BMI
                                                                    ;Yes
                                        NOTOPEN
REQCNT
000385
                          TMP
                                                                    ;No, return error
000386
        $010
                          LDA
                                                                    ;One's Complement of REOCNT
000387
                          EOR
                                                                    ; to implement main loop:
                                        REOCNT
000388
                          STA
                                                                    ; While (RC:=RC+1)<>0 Do ...
000389
                          LDA
                                        REQCNT+1
000390
                          EOR
                                        #0FF
                                        REQCNT+1
000391
                          STA
000392
000393
        $020
                          TNC:
                                        REOCNT
                                                                    ;Increment byte count
000394
                          BNE
                                        $030
000395
                          INC
                                        REQCNT+1
000396
                          BEQ
                                        $090
                                                                    ;All done
000397
        $030
                          LDY
                                        #0
000398
                                        (BUFFER),Y
                          LDA
                                                                    ;Get character
000399
000400
                                                                    ;Increment buffer address
                          TNC:
                                        BUFFER
                          BNE
                                        $040
000401
                          INC
                                        BUFFER+1
000402
                          BNE
                                        $040
000403
                          LDX
                                        #80
000404
                          STX
                                        BUFFER+1
000405
                          TNC:
                                        1401+BUFFER
000406
                          BIT
                                        PROPTNS
        $040
                                                                    ;Auto Line Feed?
000407
                                        $060
                                                                       No
                                                                    ;Last character CR?
000408
                          ASL
                                        CRFLAG
000409
                          BCC
                                        $050
                                                                    ; No
000410
                                        #ASC_LF
                                                                    ;This character LF?
                                        $020
000411
                          BEO
                                                                       Yes -- ignore it
                                                                    This character CR?
000412
                          CMP
                                        #ASC_CR
        $050
000413
                          BNE
                                        $060
                                                                       No
                                        CRFLAG
                                                                       Yes -- set CR flag
000414
                          ROR
000415
                          LDX
                                        PRODPTR
000416
                          STA
                                        LOCBUF,X
                                                                    ;Store character in local buffer
        $070
000417
                                        BUFCNT
                                                                    ;Check buffer count for max
                          LDX
000418
                          INX
000419
                          BEQ
                                        $080
000420
                          TNC
                                        PRODPTR
                                                                    Bump producer pointer
000421
                                                                    ; and buffer count
000422
                          JMP
                                        $020
                                                                    ;Loop
000423
000424
                          JSR
                                        PRIME
                                                                    ;Prime the consumer and
000425
                          JMP
                                        $070
                                                                    ; recheck buffer count
000426
000427
                          JSR
                                        PRIME
                                                                    ; Make sure consumer is running
000428
                          RTS
000429
                          .PAGE
000430
000431
000432
                 Subroutine PRIME
000433
000434
                 Start up Consumer, and wait until printer is ready.
000435
000436
000437
000438
        PRIME
                          .EQU
000439
                          BIT
                                        CSTATE
000440
                          BVC
                                        $020
                          LDY
000441
        $010
                                        DEVOFF
000442
000443
                          LDA
                                        READB, Y
                                                                    ;Wait for Ready
                          EOR
                                        RDYSTAT
                                        RDYMASK
000445
000446
                          BNE
                                        $010
        $020
                          PHP
                          SEI
000448
                          JTSR
                                        LP INTR
                                                                    ;Call interrupt handler
000449
                          LDA
                                        E REG
000450
                          AND
                                        #BITOFF7
000451
                          STA
                                        E_REG
                                                                    ;Restore Full Speed
000452
                          PLP
000453
                                        CSTATE
000454
                          BVS
                                        $010
000455
                          RTS
000456
```



```
000457
000458
000459
000460
000461
                  Parallel Printer Driver -- Interrupt Handler / Consumer
000462
000463
                This routine must be CALLED with INTERRUPTS DISABLED.
                execution, it selects Fixed Speed mode and ENABLES INTERRUPTS. It always EXITS in Fixed Speed mode with INTERRUPTS DISABLED.
000464
000465
000466
000467
000468
000469
         LP_INTR
                           LDA
                                          E_REG
#BITON7
                                                                        ;Set Fixed Speed
000470
                           ORA
000471
                                           E_REG
                           STA
000472
000473
                           LDY
                                          DEVOFF
                                                                        ;Get offset to card addresses
                                           CTRLWRD
                           T<sub>1</sub>DA
000474
                           AND
                                                                        ;Disable card's interrupt
000475
                           STA
                                           CTRLWRD
000476
                           STA
                                           CTRLREG, Y
000477
                           LDA
                                          ANYSLOT
                                                                        ;Clear 'Any Slot' interrupt
000478
                           STA
000479
                           CLI
000480
                            .PAGE
000481
                           BIT
                                          CSTATE
                                                                        ;Test Int.Handler State
000482
                                           $020
                           BPL
                                                                        ; Send a character
000483
                           LDX
                                           STATUS, Y
000484
                                                                        ; Waiting for ACK
;Check for READY
                           BVC
                                           $010
000485
                           LDA
                                           READB,Y
000486
                           EOR
                                           RDYSTAT
000487
                           AND
                                          RDYMASK
000488
                           BEQ
                                           $030
                                                                        ;Re-strobe printer
000489
                           TXÃ
000490
                                           #BITON7
                           EOR
000491
                                          #WT_RDY
$070
                           LDX
                                                                        ;Wait for Ready
000492
000493
                           BNE
                                                                            (unconditional branch)
000494
         $010
                           BPL
                                           $050
                                                                        ;Wait for ACK
000495
000496
         $020
                           LDA
                                           BUFCNT
                                                                        ;Check buffer count
000497
                           BEQ
                                           $080
                                                                        ;Wait for data
                                          CSMRPTR
000498
                           LDX
000499
                           LDA
                                           LOCBUF, X
                                                                        ;Get character from buffer
000500
                                           INVERT
                           EOR
                                           PORTA,Y
000501
                           STA
                                                                        ; and send it to printer
                           DEC
                                           BUFCNT
000502
000503
                            INC
                                           CSMRPTR
         $030
000504
                           STA
                                           STROBE, Y
                                                                        ;Stobe Printer
                           LDX
                                           #WT_RDY
000505
000506
                           LDA
                                           READB,Y
                                                                        ;Printer Ready?
000507
                           EOR
                                           RDYSTAT
000508
                                          RDYMASK
                           AND
000509
                           BNE
                                           $060
                                           TIMEOUT
000510
                           LDX
000511
                           LDA
                                           STATUS, Y
                                                                         ;Wait for ACK or Time Out
000512
                           BMI
                                           $020
                                                                         ; ACK, send next character
000513
                           DEX
000514
                                           $040
000515
         $050
                           LDX
                                           #WT_ACK
                                                                        ;Wait for ACK
000516
                                           #BITON7
                                                                        ;Enable Interrupt
000517
                           LDA
000518
000519
         $070
                           SEI
000520
                                           CSTATE
                                                                        ;Set Int.Handler State
000521
000522
                                                                        ;Enable Interrupt with
; bit 7 of Accumulator
                           AND
                                           #BITON7
                                           CTRLWRD
                           ORA
000523
                           STA
                                           CTRLWRD
000524
                           STA
                                          CTRLREG, Y
000525
                           RTS
000526
000527
         $080
                           SET
000528
                           LDX
                                           #IDLE
000529
                           STX
                                           CSTATE
                                                                        ;Wait for data
000530
                           RTS
000531
                            .PAGE
000532
000533
000534
                  Parallel Printer Driver -- Status
000535
000536
000538
000539
         LP_STAT
                           BIT
                                          OPENFLG
                                                                        ;Printer open ?
                           BMT
                                          $010
                                          NOTOPEN
                                                                        ;No, return error
000541
000542
         $010
                           LDY
                                           #00
                           LDX
                                           CTLSTAT
000544
                           BEQ
                                          STAT00
000545
                           DEX
000546
                           BEQ
                                          STAT01
000547
                           DEX
000548
                                          STAT02
                           BEO
000549
```



```
000550
                        BEQ
                                     STAT03
                                                               ;Invalid control code
000551
000552
       BADCTL
                        LDA
                                     #XCTLCODE
SYSERR
                        JSR
000553
000554
       STAT00
                        RTS
                                                               ;0 -- NOP
000555
000556
        STAT01
                        TYA
                                                               ;1 -- Status table
000557
                                     (CSLIST), Y
                        STA
000558
                        RTS
000559
000560
       STAT02
                        TYA
                                                               ;2 -- New line
000561
                                     (CSLIST),Y
                        STA
000562
                        RTS
000563
000564
                        LDX
                                     DEVOFF
        STAT03
                                                               ;3 -- Error status and buffer size
000565
000566
                        T.DA
                                     READB, X
                        EOR
                                     RDYSTAT
000567
                        STA
                                     (CSLIST),Y
000568
                        TNY
                                                               ;Error status byte
000569
                        LDA
                                     #OFF
                                                               ;Buffer size, low byte
000570
                                     (CSLIST),Y
000571
                        JISR
                                     $010
                                                               ; high byte
000572
                        INY
000573
                        LDA
                                     BUFCNT
                                                               ; Number of chars in buffer, low
                                     (CSLIST),Y
000574
                        STA
000575
        $010
                        INY
000576
                        LDA
                                     #00
                                                               ; high byte
                                     (CSLIST),Y
000577
                        STA
000578
                        RTS
000579
000580
000581
000582
               Parallel Printer Driver -- Control
000583
000584
000585
                                     OPENFLG
000586
       LP_CNTL
                       BIT
                                                               ;Printer open ?
000587
                                     $010
                                     NOTOPEN
000588
                        JMP
000589
000590
        $010
                        LDX
                                     CTLSTAT
000591
                       BEQ
DEX
                                     CNTL00
000592
000593
                                     CNTL01
                        BEQ
000594
                        DEX
                                     CNTL02
000595
                        BEO
000596
                        JMP
                                     BADCTL
                                                               ;Invalid request number
000597
000598
       CNTL00
                        .EQU
000599
                                     CSTATE
                                                               ;Test consumer state
                                                               ; Ready
;Prime consumer and
000600
                        BPL.
                                     $020
000601
                                     PRIME
                        JSR
000602
                        BIT
                                     CSTATE
                                                               ; recheck state
000603
                        BMT
                                     $010
000604
                        LDA
                                     #00
000605
                        STA
                                     BUFCNT
                                                               ;Set buffer count to 0
                                                               ¡Set producer pointer
¡Set consumer pointer
000606
                        STA
                                     PRODPTR
000607
                        STA
000608
000609
                                                               ;Set CR switch false ;Check invert bit and
                        STA
                                     CRFLAG
                                     PROPTNS
                        BIT
000610
                        BPL
000611
000612
                        LDA
                                     470#
        $030
                                     INVERT
                                                               ; set INVERT value
                        STA
000613
                        PHP
                        SEI
LDY
000614
000615
                                     DEVOFF
000616
                        LDA
                                     CTRLVAL
000617
                        AND
                                     #2F
000618
                                     CTRLWRD
                                                               ;Init UPIC control register
                        STA
000619
                        STA
                                     CTRLREG, Y
000620
                        STA
                                     CLEAR, Y
                                                               ;Disable auto strobe
000621
                        PLP
000622
                        RTS
000623
000624
000625
       CNTL01
                        RTS
000626
000628 CNTL02
                        RTS
                                                               ;2 New line
000629
                        .END
000630
END OF FILE: PARPRINT.text
LINES : 630
; #
      CHARACTERS :
                    32172
```

###